UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,842	12/15/2004	Martin Ottow	32128-211698	9005

26694 7590 02/13/2006

VENABLE LLP
P.O. BOX 34385
WASHINGTON, DC 20045-9998

EXAMINER	
SANDERS, KRIELLION ANTIONETTE	
ART UNIT	**PAPER NUMBER**
1714	

DATE MAILED: 02/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/517,842	OTTOW, MARTIN	
	Examiner	Art Unit	
	Kriellion A. Sanders	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-14 and 16-22* is/are rejected.

7)☒ Claim(s) *7 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 9-14, 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rinehart, US Patent No. 4220579 in view of Haveaux et al., US Patent No. 4220579.

Rinehart discloses thermoplastic blends having good processing characteristics and desirable physical properties. The blends are obtained by combining

A. A monoolefin copolymer rubber;

B. an amorphous non-elastomeric ***polypropylene*** resin or amorphous non-elastomeric resinous copolymer of propylene with another monoolefin; and

C. a crystalline polyolefin resin;

the said ingredients A, B and C being present in the following proportions; expressed as percent by weight based on the total weight of A, B and C:

15 to 80% of A

5 to 45% of B

15 to 80% of C

The monoolefin copolymer rubber A employed in the blend of the patented invention is an amorphous, random, elastomeric copolymer of two or more monoolefins, with or without a copolymerizable polyene. Usually two monoolefins are used, but three or more may be used. Ordinarily one of the monoolefins is ethylene while the other is preferably propylene. However, other alphamonoolefins may be used including, e.g., butene-1, pentene-1, hexene-1, 4-methylpentene-1, 5-methylhexene-1, 4-ethylhexene-1. The monoolefin copolymer rubber is preferably one that includes a small amount of at least one copolymerizable polyene to confer unsaturation on the copolymer ("***EPDM***"). Conjugated dienes such as butadiene or isoprene as well as non-conjugated dienes may be used. These include diolefins such as 1,4- or a cyclic diene, especially a bridged ring cyclic diene, as in dicyclopentadiene or an alkylideneorbornene as in methylenenorbornene or ethylidenenorbornene as well as cyclooctadeiene, methyltetrahydroindene.

The copolymer A of Rinehart corresponds to either the EPDM of applicant's claim 1 or the ethylene propylene terpolymer of applicant's claim 2.

The crystalline polyolefin resin C of Rinehart is a solid, high molecular weight resinous plastic material made by polymerizing olefins such as ethylene, propylene, butene-1, pentene-1, 4-methylpentene, etc., in conventional manner. Thus, such crystalline polyolefins as polyethylene (either of the low density e.g., 0.910-0.925 g/cc, medium density 0.926-0.940 g/cc or high density e.g., 0.941-0.965 type) may be used, including linear polyethylene. ***Polypropylene*** is a preferred polyolefin plastic, having highly crystalline ***isotactic*** and ***syndiotactic*** forms. Frequently the density of ***polypropylene*** is from 0.800 to 0.980 g/cc. Largely ***isotactic polypropylene*** having a density of from 0.900 to 0.910 g/cc is particularly preferred.

It is inferred that syndiotactic polypropylene would be that having a density of from 0.800 to at least 0.89 g/cc.

Patentee employs a component B, which is an amorphous, non-elastomeric ***polypropylene*** homopolymer or amorphous, non-elastomeric copolymer of propylene with another monoolefin (e.g., ethylene), characterized by a low degree of ***isotactic*** or ***syndiotactic*** blocks of propylene or alpha-olefin copolymer.

Hydrocarbon oils may be used in the blends of this invention.

Any conventional extender oil may be employed. Non-limiting examples are extender and process oils. Important extender oils include the paraffinic, naphthenic and aromatic type substantially non-volatile compatible **mineral oils.**

The composition may further include other conventional compounding ingredients such as particulate or fibrous fillers (non-limiting examples are calcium carbonate, carbon black, silica, glass, asbestos, clay, **talc**), pigments, processing aids or lubricants, mold release agents, u.v. screening agents, antioxidants or stabilizers for the rubber or resin or both, etc. Any conventional antioxidant or stabilizer may be used, including, by way of non-limiting example, amine types, phenolic types, sulfides, phenyl alkanes, phosphites, etc.. Included are such materials as 2,2,4-trimethyl-1,2-dihydroquinoline, diphenylamine acetone condensate, aldol-alpha-naphthylamine, octylated diphenylamine, N-phenyl-N'-cyclohexyl-p-phenylenediamine, 2,6-di-tert-butyl-4-methylphenol, styrene-**resorcinol resin**, o-cresol-monosulfide, di-p-cresol-2-propane, 2,5-di-tert-amyl-hydroquinone, dilauryl-3,3'-thiodipropionate and similar dialkyl thiodipropionates, etc.

The form of the invention involving a dynamic semi-curing step is particularly advantageous from the standpoint of providing better melt flow, improved high temperature physicals and better die swell. A preferred elastomer for use in the invention is the low unsaturation type of ***EPDM*** terpolymer, containing such non-conjugated dienes as 1,4-hexadiene, dicyclopentadiene or 5-ethylidene-2-norbornene. Preferred curatives for these are the peroxide, sulfur or azide types described above. The resin blends are mixing the components in a conventional mixer to form a melt. The amounts of additives overlap those of applicant's claims. Formation of any conventional type of molding would have been within the realm of the ordinary practitioner of this art at the time of applicant's invention. See col. 1, line 48 through col. 10, line 53.

Rinehart differs from the present invention in that it utilizes an amorphous polyolefin as opposed to a syndiotactic polyolefin to modify the viscosity of the resin blends.

The Rinehart invention is directed to utilizing an amorphous polypropylene because of its lower viscosity to improve the processability of the compositions. The decreased viscosity and improved flow allows for faster and easier injection molding procedures due to improved flow into the mold. See col. 6, lines 26-35. The Rinehart analysis of the viscosities of isotactic olefins, syndiotactic olefins and amorphous olefins sheds light as to the physical properties one of ordinary skill in the art would expect when combining these components. Rinehart states that unlike crystalline polyolefins, such as crystalline ***polypropylene,*** amorphous polymers or copolymers are generally soluble below 100.degree. C. Whereas largely ***isotactic*** crystalline ***polypropylene*** has a density of from 0.900 to 0.910 g/cc, amorphous ***polypropylene*** has a density below 0.900 g/cc, usually within a range 0.82 to 0.88 g/cc. Whereas crystalline ***isotactic***

polypropylene is not soluble in organic solvents, the amorphous ***polypropylene*** is soluble. Amorphous ***polypropylene*** is usually obtained by extracting the mixture of crystalline ***isotactic polypropylene*** and amorphous ***polypropylene*** produced by typical polymerization catalysts with an appropriate solvent. The amorphous ***polypropylene*** is that fraction which is soluble in the extraction solvent. Low ***viscosity*** is one characterizing property of conventional amorphous ***polypropylene*** obtained by extraction from crystalline ***polypropylene***. Because of the lack of crystallinity, the softening points as measured by ring and ball are much lower than expected for crystalline ***isotactic polypropylene***. Crystalline ***isotactic polypropylene*** has a melting point in the range of about 165.degree.-189.degree. C. Commercially available ***isotactic polypropylene*** indicates a melting transition by differential thermal analysis (DTA) in the range of about 155.degree.-165.degree. C.

Haveaux et al, US Patent No. 6,881,493 discloses that in contrast to the ***isotactic*** structure, ***syndiotactic*** polymers are those in which the methyl groups attached to the tertiary carbon atoms of successive monomeric units in the chain lie on alternate sides of the plane of the polymer. ***Syndiotactic*** polymers are crystalline and, like the ***isotactic*** polymers, are insoluble in xylene. In one aspect, the present invention provides use of syndiotactic/atactic block ***polypropylene*** as a modifier of a polyolefin, such as ***isotactic*** and/or copolymeric ***polypropylene*** and/or other polyolefins. The modified polyolefin or ***polypropylene*** formed thereby may be capable of moulding, for example by extrusion, injection or compression and can be used, for example, in high impact resistance applications such as automobile parts, electronic appliances, packaging and sports goods. Accordingly, there is further provided a high impact resistance polyolefin such as a ***polypropylene,*** comprising a dispersion of syndiotactic/atactic

block ***polypropylene*** in a continuous phase comprising ***isotactic*** and/or copolymeric ***polypropylene***. Preferably, the amount of syndiotactic/atactic block ***polypropylene*** is in the range **3 to 50%** preferably 5 to 15% by weight of the ***polypropylene***. It is thought that the syndiotactic/atactic block ***polypropylene*** forms discrete dispersed particles in the continuous phase. In this way, the syndiotactic/atactic block ***polypropylene*** functions in the same way as rubber or elastomers in high impact polystyrene or as ***EPDM*** (ethylene propylene diene monomer such as a 1,4-hexadiene, or dicyclopentadiene or 5-ethylidene norbornene) particles in ***polypropylene.*** In a further aspect, the present invention provides use of syndiotactic/atactic block ***polypropylene as a viscosity*** **improver**, especially in a motor oil. Patentee further discloses a motor oil that includes syndiotactic/atactic block ***polypropylene,*** typically in an amount of from 1 to 10 by weight of the material. See col. 2, lines 42-63 and col. 5, lines 38-45.

Given the analyses as provided by Rinehart and Haveaux et al it is clear that syndiotactic polypropylene possess a higher viscosity than the amorphous polypropylene of Rinehart and is known to be useful as a viscosity promoter when used in amounts of from 1-10 % of the material. Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to utilize 1-50 weight % of the syndiotactic polypropylene of Haveaux et al in lieu of the amorphous polypropylene of Rinehart to modify the viscosity of the resin blends of Rinehart. It is noted that the viscosities of the amorphous and syndiotactic polypropylenes overlap, yet the syndiotactic polypropylene is recognized to be a viscosity improver.

Claims 7 and 8 are objected to as depending upon rejected base claims. The catalysts and polymers set forth therein are not disclosed by the references.

Conclusion

Applicant has amended the claims to further define the syndiotactic polypropylene component.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 6:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kriellion A. Sanders
Primary Examiner
Art Unit 1714

ks